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EXHIBIT B

SUR-RESPONSE TO UNIVERSITY OF ROCHESTER
INVESTIGATION COMMITTEE'S FINAL REPORT

SUR-RESPONSE SUBMITTED BY:
PROFESSOR LIYANAGAMAGE R. DIAS, PhD

SUR-RESPONSE ISSUED: FEBRUARY 23, 2024

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A. Introduction.

In reviewing the metadata of the PDF document purportedly representing the Investigation Committee's Final Report, dated February 8, 2024, and submitted to the Provost, it has come to my attention that the University's legal counsel, Leslie Thornton, may have primarily drafted the response to my detailed Response to the Draft Report with limited, if any, consultation with the scientific members of the Investigation Committee. I wish to express, with all due respect, that it seems the comprehensive scientific clarifications and explanations I provided have not been directly engaged with by the scientific members of the Investigation Committee. My detailed response, which elucidated the complexities and scientific nuances of conducting research in the field of high-pressure low-temperature superconductivity, appears to have been overshadowed by a focus on procedural interpretations rather than the substantive scientific dialogue essential for addressing the allegations presented.

On January 30, 2024, I submitted a comprehensive 218-page document in response to the Draft Report by the Investigation Committee. This submission was intended to address and clarify the concerns raised, with a particular focus on the scientific depth of our research. It included thorough discussions on the methodologies and scientific processes we employed, detailed data analyses, and theoretical justifications to affirm the validity and integrity of our findings. It is concerning that the Investigation Committee has largely overlooked these scientific explications, allowing instead for a response to be formulated by legal counsel that centers on procedural matters and allegations that diverge from the core scientific premises I have put forth. This oversight neglects the critical scientific discourse necessary for the accurate interpretation of my research and instead propagates a misunderstanding and misinterpretation of the scientific evidence presented.

My response sought to provide clarity on the scientific foundation of our work, offering additional datasets and analyses that, though deemed extraneous by legal counsel, are pivotal for comprehending the scientific challenges and context of our research. The suggestion that I failed to share raw, original data fails to acknowledge the comprehensive documentation and data files submitted in my response and available to the Investigation Committee, which had full access to my office and laboratory equipment, computers, lab books, etc. This was part of our commitment to demonstrate the thorough and transparent approach we have taken in our research.

The Committee's emphasis on data and findings published after the contested works, and its view of their irrelevance to the investigation, fails to recognize the accumulative and iterative nature of scientific research. Such a stance disregards how subsequent findings can validate and provide clarity to earlier research, thus challenging the baseless allegations of research misconduct.

Additionally, the expectation to precisely identify all pertinent files among a vast assortment of sequestered materials, without acknowledging the practical challenges involved, imposes an unrealistic expectation that overlooks the complexity of conducting detailed scientific research. My proactive efforts to provide the Investigation Committee with extensive access to materials were undertaken in a spirit of cooperation, aiming to enable a comprehensive and equitable evaluation of the evidence.

The allegations of data manipulation and accusations of fabrication and falsification have been met with robust scientific explanations and analyses in my response. These detailed clarifications,

which reflect a deep understanding of our experimental procedures and the variability inherent in sample behaviors under study, seem to have been dismissed in favor of a narrow definition of misconduct. My detailed explanations, especially regarding "phase corrections" and the intricacies of measuring highly inhomogeneous samples, were intended to illuminate the scientific rationale behind our data presentation and methodologies.

In this report, I aim to further elucidate and respond to the feedback prepared by legal counsel, building on my initial response to the Investigation Committee's Draft Report. It is my intention to persist in facilitating the University's understanding of the Investigation Committee's misconceptions regarding our research, methodically addressing each point with the utmost respect for the scientific integrity that underpins our work. My goal is to provide a thorough explanation to ensure the methodologies, data interpretations, and conclusions of our research are fully understood.

B. Responses to Investigation Committee's Response to My Response to Draft Report.

1. Transparency and Engagement on Raw Data.

I wish to underline with due respect that all raw data relevant to the research projects sponsored by the National Science Foundation (NSF) and the Department of Energy (DOE) were completely shared and made accessible to the Investigation Committee. Despite this act of full transparency, it is with regret that I observe the Committee's choice not to engage in direct dialogue or to arrange a meeting to discuss these crucial matters. Such direct interaction would have undoubtedly contributed to a deeper comprehension of the research methodologies, the interpretation of data, and the fundamental scientific concepts driving our work. Furthermore, the Committee's decision not to avail themselves of the opportunity to meet with me, despite my expressed willingness to elucidate any questions and engage in detailed discussion on the complexities of our research as outlined in my thorough response to the Draft Report, represents a forgone chance to resolve any misunderstandings and enhance mutual understanding.

2. Clarification on Research Replication.

The perspective taken by the Investigation Committee regarding the replication of our research highlights a discernible inconsistency. Initially, the Investigation Committee interpreted the supposed absence of replication as indicative of data fabrication, a viewpoint that significantly concerned me. However, upon clarification that replication of our research had indeed been undertaken, the Investigation Committee's position appeared to evolve, albeit without fully recognizing the critical importance of this replication. Such a shift, lacking in acknowledgment of the replication's significance, introduces confusion and detracts from the logical coherence of the Investigation Committee's assessment process. This inconsistency not only challenges the integrity of the investigative framework but also overlooks a fundamental principle of scientific inquiry, wherein replication serves as a cornerstone for affirming the validity of research outcomes.

3. Clarification on Scientific Discourse and Practices.

The assertion by the Committee that discussions on "phase corrections" did not occur between myself, the students, and the Committee lacks a substantial basis, especially considering no direct

opportunity for such a discussion was facilitated. The absence of a meeting to explore these critical scientific procedures makes it unjust to assume that these discussions were omitted on my part. The proficiency of graduate students Nathan Dasenbrock-Gammon and Dr. Sachith Dissanayake in executing these corrections underscores a misapprehension or unfamiliarity on the part of the Investigation Committee with the standard scientific practices prevalent in our domain.

Furthermore, the Committee's reliance on interviews with students, who reportedly never mentioned phase corrections, should prompt a reevaluation of the interview process's comprehensiveness. The suggestion that this information was purposefully overlooked to align with the Committee's conclusions is concerning. It is crucial to recognize that phase corrections are integral to research in superconductivity, and this oversight inadvertently points to a gap in the Committee's understanding of the specialized field of high-pressure low-temperature superconductivity. This observation is intended to respectfully indicate the necessity for a deeper engagement with the scientific nuances of our research area.

4. Clarification of Scientific Methods and Procedures.

The depiction of our scientific methods by the Investigation Committee, specifically regarding data subtraction, selective omission, and resampling, necessitates a detailed clarification. It is important to state that the practices described by the Committee, as data subtraction, selective omission, and resampling, do not align with the actual processes we employed in our research. Therefore, I must clarify that I have not acknowledged any such practices because they simply did not occur as characterized by the Committee.

a. Insight into Phase Corrections.

Phase corrections are a standard procedure across various types of AC measurements, including resistance, susceptibility, and heat capacity. The Committee's report overlooks the critical detail that our data focused on the real part of the resistance, an omission that fails to capture the essence of our scientific approach. Contrary to the Committee's assertions, there was no resampling involved in our methodology, nor have I conceded to any such practice. Furthermore, I have provided a comprehensive explanation of the phase diagram of the material, specifying that our reports focused exclusively on phase II of the sample, which exhibits superconductivity. This decision was made following thorough discussions with all contributors prior to the publication of our findings. The process of offset removal, a widely recognized practice in electronic instrument measurements, seems to be misconstrued by the Committee as subtraction. The Committee's unfamiliarity with these fundamental scientific procedures is concerning. Additionally, the reference to a "large fraction of data" being questioned by the Committee pertains exclusively to offset voltages, which are standard adjustments made in measurements at various pressures (e.g., 10 kbar, 16 kbar, and 20 kbar). It appears there may be a conflation between the concepts of offset removal and phase correction by the Committee. Moreover, by comparing our findings with those related to MgB₂, where the superconducting state resistance significantly differs from that observed in our research on LuHN under varying pressures, it further underscores a misunderstanding of typical residual resistance values expected in such experimental conditions. This comparison serves to highlight a gap in the Committee's understanding of the nuances involved in high-precision scientific measurements.

b. Clarification on Offset Removals.

The nuanced distinction between offset removals and phase corrections is foundational to our scientific methodology, yet this distinction seems to have been overlooked or misunderstood by the Investigation Committee. This misinterpretation could indicate a lack of familiarity with these critical scientific processes, which are standard in our field. The suggestion that this confusion may have been intentional, to align with predetermined conclusions, is deeply concerning and merits clarification.

5. Clarification on Data Attribution.

The claim that data from external sources was used without appropriate attribution is baseless. It is important to clarify that the data in question, particularly concerning MgB₂, was produced in-house by graduate student Sasanka Munasinghe. The decision of the Investigation Committee not to interview Mr. Munasinghe has unfortunately led to a misinterpretation about the provenance of this data. This oversight highlights a significant concern regarding the thoroughness and rigor of the Committee's investigative approach.

6. Concerns Over Narrative Shifts and Scientific Engagement.

I wish to express concern that the Investigation Committee has seemingly altered its narrative instead of addressing the specific errors I outlined in my detailed response. This adjustment appears designed to maintain the initial findings of their report, disregarding the comprehensive clarifications and evidence we have submitted. Importantly, the Committee has yet to provide concrete evidence to support its allegations concerning the misrepresentation of data as "source data" in communications with journal editors or referees. Such a stance not only questions the integrity of the investigative process but also suggests a hesitancy to thoroughly engage with the scientific arguments and evidence we have put forth.

7. Clarification of Experimental Results.

a. Analysis of Figure 4 and the MgB₂ Sample.

Regarding the observations made in Figure 4, it has come to my attention that there may have been a modification in the narrative presented by the Committee following the detailed corrections and insights I offered in response to their preliminary conclusions. My specific analysis, especially related to the heat capacity of the MgB₂ sample and the presentation of its signal, was intended to rectify what I perceived as a critical oversight by the Committee. Initially, the Committee deemed the depiction of the MgB₂ data as precise, crediting it to the work of a student. Yet, after I provided an accurate analysis, it seems the Committee's position shifted, possibly indicating a hesitance to correct misunderstandings that might affect the integrity of their report.

b. Insights into Extended Data Figure 13a.

Our documentation and explanations have meticulously detailed the procedures and outcomes related to the evidence of superconductivity, notably including the data showcased in Extended Data Figure 13a. This figure, along with the focused discussion on Phase II, forms the cornerstone

of our findings. Unfortunately, the interpretation by the committee seems to overlook the stringent scientific approach and collaborative efforts that underpin our group's work, revealing a notable disconnect with the foundational concepts and methodologies inherent to high-pressure low-temperature superconductivity research. The critique directed at Extended Data Figure 13a, among other figures, seems to originate from a basic misunderstanding of the experimental setup and the scientific logic guiding our data presentation strategy. These figures were designed to highlight specific scientific phenomena under meticulously controlled experimental conditions, responding directly to peer reviewer feedback. The allegations of data manipulation do not reflect the true scientific intent and framework of our study.

c. Clarification on Extended Data Figure 15 Analysis.

The critique regarding Extended Data Figure 15 suggested by the committee, particularly the assertion that I manipulated data by subtracting a background to artificially demonstrate superconductivity, necessitates a thorough explanation. Moreover, their suggestion that crucial evidence was withheld from referees during the review process, insinuating a potential for rejection had the unaltered data been presented, is a point I must respectfully contest. Through detailed email exchanges, which I have provided, the referees were fully informed of the data and its analysis, subsequently endorsing the paper for publication after a comprehensive review, including the examination of similar analytical methodologies in related research.

This misrepresentation by the committee seems to pivot away from the crux of the scientific discourse, focusing instead on specific numerical values, possibly due to a misunderstanding of the analytical framework applied. For clarity, let me delineate the calculations once more, emphasizing the units and scale of measurement, which appear to have been a source of confusion. In our analysis, the voltage measured was 0.02 millivolts (mV), and the current applied was 2 milliamperes (mA). Applying Ohm's Law, where Resistance (R) equals Voltage (V) divided by Current (I), yields:

$$R = V/I = (0.02 \text{ mV})/(2 \text{ mA}) = (0.02 \times 10^{-3})/(2 \times 10^{-3}) = 10 \times 10^{-3} = 10 \text{ m Ohms}$$

This calculation underpins the reported findings, and I am challenged to understand the committee's position on what they perceive as inaccurately presented. The values and methodology, I believe, are sound and transparently communicated, reflecting the scientific rigor of our work.

d. Clarification on the Interpretation of Figure 3 Data.

In the matter of the analysis presented in Figure 3, while the committee has recognized the observation of the Meissner effect as a definitive indication of superconductivity, their subsequent critiques warrant clarification. It appears there may be a misunderstanding regarding the experimental setup and the evidence for superconductivity as observed in our experiments. The committee's assertion concerning the central position of the cell being 33 mm, when in fact it is 32 mm, highlights a fundamental discrepancy in their understanding of the experimental setup. Furthermore, their analysis seems to overlook the nature of inhomogeneous samples where the

geometric center of the cell does not necessarily align with the center of superconductivity within the sample.

Moreover, the specific dimensions of the sample and the spatial configuration relative to the detection coils were not fully considered. Our sample, being a tube of 6 mm in height and approximately 2 mm in diameter, situated with a 10 mm distance between coils, would logically fall within the detection range, countering the suggestion that it might be outside the detectable area. Additionally, the committee's hypothesis regarding the cell's background contributing a diamagnetic response is inconsistent with observed magnetic behaviors, as diamagnetism does not produce a positive magnetic moment.

The presentation of another sample in our report, which lacks evidence of the Meissner effect due to the absence of a superconducting phase, further contradicts the committee's hypothesis. This comparison was intended to demonstrate the specific conditions under which superconductivity manifests, underscoring the precision of our experimental observations.

Regarding the discussion on zero-field-cooled (ZFC) and field-cooled (FC) measurements, it is crucial to understand that the FC measurement's indication of shielding is a characteristic of the Meissner effect. The methodology for determining the background signal aims to accurately reflect the shielding effect by comparing it to the signal when the sample is near, but not within, the superconducting region. Choosing the 32 mm position, as opposed to any other, was based on a thorough understanding of our experimental setup and was intended to ensure the accuracy of the magnetic moment measurements.

In summary, the criticisms presented appear to stem from a series of misunderstandings regarding the experimental design and the interpretation of data. Our explanations and the data provided directly from the PPMS are intended to offer clarity and support the integrity of our findings, without any alteration of resolution, noise, or temperature series.

e. Understanding Figure 1a Data.

Regarding Figure 1a data, I am perplexed as to why the origin files are not considered raw data. They are indeed raw data and were directly emailed to me from the students. The committee should navigate to the folder containing these Origin files to view the raw data files. It appears to me that the committee has made very sloppy mistakes by claiming that I fabricated data. This seems premeditated and biased, as they were likely influenced by the CSH data. It is frustrating that while the committee can locate all the other data files, they seem unable to find the data files when I point out the errors they made. This is unacceptable.

f. Clarification on Figures 1a and S13 from the CSH Paper.

In reference to Figures 1a and S13 of the CSH paper, it is important to address the committee's claims regarding the alleged fabrication or falsification of data. The committee has not presented concrete evidence or detailed reasoning to substantiate these claims. This absence of evidence raises questions about the basis for their conclusions. It is pertinent to highlight that the integrity of the data can be demonstrated through its reproducibility under scrutiny. A pivotal question

arises: How could the results have been successfully replicated in a live demonstration before an audience of experts if the data were not genuine?

This scenario underscores a significant aspect of scientific research — the ability to replicate findings under varied conditions and scrutiny is a fundamental test of their validity. The successful replication of these results, particularly in a setting that allowed for immediate expert feedback and observation, strongly supports the authenticity and reliability of the data presented in our paper. This point is crucial for understanding the robustness of the scientific process applied in our research and emphasizes our commitment to transparency and scientific integrity.

C. Conclusion

Upon thorough review of the various points of contention and the comprehensive responses provided, it becomes apparent that the Final Report issued by the Investigation Committee has not fully engaged with the substantive scientific arguments and evidence put forth. This oversight not only reveals a lack of depth in understanding the complexities and nuances inherent in our specialized field but also raises questions about the thoroughness and impartiality of the committee's review process. We respectfully assert that a more scientifically informed and collaborative approach by the Investigation Committee would greatly enhance the accuracy and constructiveness of the resolution process concerning the issues raised.

It is crucial for the ongoing discussion regarding these allegations to transcend procedural criticisms and to earnestly incorporate a substantive examination of the scientific principles and context underlying the research in question. The noticeable absence of in-depth scientific dialogue from the Investigation Committee indicates a significant misunderstanding that needs to be addressed to achieve a just and accurate conclusion to this matter. Therefore, I earnestly request the Investigation Committee to approach the detailed explanations and clarifications provided in my responses with an open-minded and objective stance. My dedication to upholding scientific integrity and ensuring transparency remains unwavering. I am fully prepared to engage in meaningful dialogue and to clarify any aspect of my research further to address and resolve any concerns that have been raised.

/s/ Liyanagamage R. Dias
Liyanagamage R. Dias, PhD

February 23, 2024
Date